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Notes on Three Sesidæ (Lepidoptera) Affecting the "Missouri Gourd" (*Cucurbita foitidissima* H. B. K) in Kansas.

BY FRANCIS X. WILLIAMS.

Plates XXXI and XXXII.

Melittia gloriosa Hy. Edwards.

(Bull. Brook. Ent. Soc., III, 71; 1880.) Pl. XXXI, fig. 6.

THIS, a near relative of our common "squash-vine borer," is a very large and handsome "clearwing" moth, with brilliant red, pale yellow, and blue-black markings, strongly tufted legs, and an alar expanse in some of the large females of somewhat more than 65 mm.

As far as I am aware, *M. gloriosa* has not been reported heretofore from Kansas, where it was taken on the Kansas University Biological Survey, in two counties, viz., Seward, in the southwest, during August, 1911, and Graham, more towards the northwestern portion of the state, in August, 1912. In the latter county but one specimen was taken, while upwards of two dozen were secured in Seward county. An extensive field of sandy soil on the banks of the Cimarron river supported a number of large, wide-spreading *Cucurbita,* and it was about these ill-smelling vines that *gloriosa* was taken. The majority of the moths were in fresh condition, for many were just emerging. This seemed to take place during the morning hours, and at least as early as 8 A. M., for at 8:30 a fine ♀, but a few minutes from the pupa, was found sitting on a ripe

gourd, her still soft wings raised above her back, while beside the fruit was the extruded pupal shell. The latter were occasionally found among the vines, sometimes near the main stem, and on other occasions as far as six feet removed therefrom.

Owing to the multitude of grasshoppers, particularly of the genus *Melanoplus*, it was often difficult to approach the moth, which would be rudely disturbed or forewarned of my coming by some bungling acridian. The flight of the female moth was heavy, and accompanied by a humming sound. Whatever may be said of the protective mimicry of these insects, in that they resemble various wasps, certainly did not apply in the case observed by me, in which one of these *Melittias* was pursued, captured and greedily gobbled up by a kingbird.

Two specimens were observed laying their eggs rather indiscriminately, on both green and withered parts of the vine.

No larvæ were found, though considerable digging was resorted to. The "Missouri gourd," like the manroot (*Megarrhiza*) in California, and upon which the sesian likewise feeds, has a colossal root, penetrating the soil to no little depth.

The lepidopterist, Henry Edwards, took a specimen of this moth at San Leandro, Cal., resting "on a tree in a field of melons." It occurs likewise in Arizona, Texas, and New Mexico.

The adult moths, like most Lepidoptera whose larvæ are internal feeders, should be "degreased" by detaching the abdomen and immersing the same in benzine until the fatty matter is dissolved.

Melittia satyriniformis Hubner.

(Zutr. Exot. Schmett., F. 453; 1825.)

The "squash-vine borer" was taken in the adult state about *Cucurbita fœtidissima* vines in Pratt, Barton and Rush counties, 1911-1912. It was also collected by Dr. F. H. Snow in Clark and Douglas counties. It is considerably larger than the next species, and unlike it lacks the dark dorsal stripe of the abdomen; nor does the larva of *satyriniformis*, as far as I am aware, produce galls on the vines attacked, which is the case with the larva of *snowi*.

Melittia snowi Hy. Edwards.

(Papilio, II, 53; 1882.) Pl. XXXI, figs. 1-5; pl. XXXII, figs. 7 and 8 (galls).

Snowi expands about 23 mm. It was found to occur wherever the "Missouri gourd" was growing. This includes at least two-thirds of Kansas, beginning from its western border. The type of the species, however, was taken in eastern Kansas (Douglas county) by Doctor Snow, prior to 1883.

The following notes were made on this species secured at Hays, Ellis county, July 16-22, 1912:

In the earlier part of the season the galls or swellings on *Cucurbita fœtidissima* are comparatively small and nearly solid, and the larvæ within quite young. Both grow quite rapidly, however, and the caterpillar soon eats out most of its abode, leaving the same little more than a shell. At the above date numbers of the larvæ are deserting the galls by a ventral or nearly ventral aperture, to enter the earth. By July 19 nearly all the galls have been vacated, and a few small terminal swellings containing young larvæ remain.

Each gall contains but one larva, and is entire until the exit hole is made. As can be seen from plate XXXII, the galls are usually longer than wide; they may be of nearly uniform coloration, or else striped like the gourd. Though perhaps most frequent on the radiating and trailing stems, they may be developed from a leaf petiole, and more rarely from a tendril stem (fig. 8). They were found to vary in dimensions from about one to four inches (25-102 mm.) long, and from two-thirds to one and a quarter inches (17-32 mm.) in diameter.

Hardly has the larva abandoned the gall than small blackish flies enter it and lay their eggs therein. The numerous maggots resulting soon devour the remaining tissue, so that the gall dries up rapidly and in a measure collapses. Subsequently, small Staphylinidæ and spiders may be found within.

In but one instance was the gourd itself attacked, and in this case it appeared as though the large larva had entered it but recently.

The larva (fig. 2) when mature is about 26 mm. long, quite stout, with a small brown head, and of a dirty white color. Leaving the shelter of the gall, it burrows into the soil, there to construct a very tough cocoon, about 17 mm. long, of silk

and grains of earth. Some of these cocoons disclosed moths within a few weeks (August 16 to about 30), the pupa working its way to the surface. A goodly number, however, hibernated in their cocoons as shortened, pale yellow larvæ. Two of these cocoons, which were cut open in December, 1912, showed the inmates with the head pointing toward the narrower end of the cell. These hibernating cocoons produced imagines in 1913, from April 22 to June 14. The height of the season for this spring brood appeared to be during the first half of May, the June specimens being stragglers. This brood was reared in the laboratory, and consequently under artificial conditions.

The insect is therefore imperfectly double-brooded. No adults were taken in the field, but a reared specimen laid a number of flattened oval eggs, somewhat depressed on the disc and at the broader end. They are about .8 mm. long, of a brownish color, and under the compound microscope present a shallowly reticulate surface; in addition they are finely granulate.

It is not unlikely that *Melittia snowi,* if not already a cucurb pest, like its ally, *satyriniformis,* in some sections, will sooner or later become of economic importance.